Progress towards long term FMD control in the Trans-Caucasus

Strengthening FMD prevention and emergency response capacity in the Trans-Caucasian countries

(MTF/INT/003/EEC)

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FMD situation in the past two years

Outbreaks:

- spring 2007: serotype O PanAsia II in Nagorny Karabakh
- Sep./Oct.07 clinical signs and A serology in southern Georgia
- last notifications to OIE: 2001 (Azerbaijan), 2002 (Armenia, Georgia)

Media reports/suspicions (FMD suspicions in cattle)

- Armenia and Georgia, 2007
- All followed-up by project staff
- FMD excluded by the CVOs
FMD vaccination (autum 2008)

Animal no.s:

- **Total:**
  - Large ruminants (LR): 4.6 mill
  - Small ruminants (SR): 9.7 mill

Buffer zone (BZ):
- LR: 1.3 mill
- SR: 2.0 mill

Vacc. Coverage:
- **LR**:
  - Total: 69% (0-100%)
  - Buffer zone: 97% (21-100%)
- **SR**:
  - Total: 14% (0-100%)
  - Buffer zone: 68% (0-100%)

Vaccine:
- A Iran 05, O, Asia1
  from FGI-ARRIAH, Russia

Total delivered: 1,429,000 doses
- Azerbaijan: 867,000 doses
- Armenia: 282,000 dos
- Georgia: 280,000 dos
## EuFMD/EC vaccine support (2007-09)

<table>
<thead>
<tr>
<th>Vaccination campaign</th>
<th>Azerbaijan</th>
<th>Armenia * (on region level)</th>
<th>Georgia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2007</td>
<td>430,000</td>
<td>240,000</td>
<td>320,000</td>
</tr>
<tr>
<td>Autumn 2007</td>
<td>866,000</td>
<td>287,000</td>
<td>-</td>
</tr>
<tr>
<td>Spring 2008</td>
<td>867,000</td>
<td>282,000</td>
<td>240,000</td>
</tr>
<tr>
<td>Autumn 2008</td>
<td>867,000</td>
<td>282,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Spring 2009</td>
<td>866,799</td>
<td>282,232</td>
<td>275,000</td>
</tr>
</tbody>
</table>

## Vaccination coverage (in %) in autumn 2008; average & range on district level

<table>
<thead>
<tr>
<th>Vaccination campaign</th>
<th>Georgia</th>
<th>Armenia * (on region level)</th>
<th>Azerbaijan</th>
<th>Nagorny Karabakh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buffer zone, cattle</td>
<td>93 (77-99)</td>
<td>160 (73 - 201)</td>
<td>98 (84-100)</td>
<td>64 (21-119)</td>
</tr>
<tr>
<td>Buffer zone, small ruminants</td>
<td>12 (0 - 100)</td>
<td>68 (0 - 114)</td>
<td>14 (0 - 36)</td>
<td>34 (6-85)</td>
</tr>
<tr>
<td>Other areas, cattle</td>
<td>1 (0 - 100)</td>
<td>147 (94 - 150)</td>
<td>77 (40 - 100)</td>
<td></td>
</tr>
<tr>
<td>Other areas, small ruminants</td>
<td>1 (0 - 100)</td>
<td>0.3 (0 - 89)</td>
<td>14 (0 - 59)</td>
<td></td>
</tr>
</tbody>
</table>

* booster vaccinations incl.
Changes in FMD control capacity in the past 2 years

Vaccination

- Increase of vaccine quantity and of the buffer zone area
- Increased revaccination of calves
- Improvement of the cool chain
- National FMD control still relies to a large extent on the EuFMD project (esp. Georgia)

Data work and epidemiological capacity

- Regular reporting of national project consultants
- Guiding national decision making:
  - national project consultants
  - regular risk assessments
- Updating national FMD contingency plans
Changes in FMD control capacity in the past 2 years

**Laboratories**

- NSP serology established
- Handling of large amounts of sera and data (all countries)
- Armenia and Azerbaijan:
  - Participation in future WRL proficiency tests
  - Refurbishment and increase of diagnostic capacities of national labs
  - PCR capacity established (not for FMD currently)
  - Several in-country trainings on NSP serology
- Georgia: use of the national lab for project FMD diagnostic work (NSP testing in spring 2009)
Changes in FMD control capacity in the past 2 years

**Vet. Services**

**Armenia and Azerbaijan:**
- availability of resources and staff payments have improved on all levels

**Georgia:**
- Very limited disease control resources on the ground:
  - no functioning system of state or private large animal vets in villages
  - very few state vets and resources on central and district level

**Georgia and Azerbaijan:**
- border vet. inspection does not belong to MoA (increased risk of disease introduction ?)
Progression on the West Eurasia Roadmap

- Approach supported by all countries

<table>
<thead>
<tr>
<th>Situation at the Shiraz meeting in 2008</th>
<th>Azerbaijan</th>
<th>Armenia</th>
<th>Georgia</th>
</tr>
</thead>
<tbody>
<tr>
<td>stage 2 *</td>
<td>stage 2 *</td>
<td>stage 1 (90%)</td>
<td></td>
</tr>
</tbody>
</table>

| Progression to next stage | 2010: stage 3 * | 2010: stage 3 ** | 2009: stage 2 **  
|---------------------------|-----------------|-----------------|--------------------|

* self assessment
** assessment by EuFMD/FAO
Main risks to the national FMD control policy

- no incentives/penalisation for reporting of FMD or suspicions
- early detection of newly introduced FMDV (transparency, insufficient virus detection, difficult shipment)
- inadequate funding & recognition of the work of the VS and FMD control
  - no major disease outbreaks reported
  - FMD poses no public health risk
  - low national importance of the livestock industry
- fading FMD awareness on all levels
- Georgia:
  - national budget cuts for VS
  - no clear FMD control policy
  - poor vaccination coverage and no re-vaccination of young stock
Objective: to estimate the distribution of NSP antibodies in the project buffer zone and other areas.

- Two stage random sampling design:
  - Village level: estimation of NSP prevalence
  - Animal level: detection of NSP positives (at 10% prevalence)

- Age of cattle: 4 - 18 months
- Time: May 2008 - Mar 2009
NSP survey in Trans Caucasus

Results:

- > 12,000 sera collected
- > 8,000 sera tested in national labs
- no signs of FMD reported
NSP survey in Trans Caucasus

Results:
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- no signs of FMD reported
- > 8,000 sera tested in national labs

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of cattle sera</th>
<th>Mean NSP prevalence</th>
<th>Mean NSP prevalence: Range on district level</th>
<th>Mean NSP prevalence: Range on village level</th>
<th>Sampling date</th>
<th>Age of cattle; mean (±1SD); in months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan (excl. Nakhichevan)</td>
<td>3363</td>
<td>23%</td>
<td>0-65%</td>
<td>0-86%</td>
<td>7/2008</td>
<td>26.2 (12.0-40.4)</td>
</tr>
<tr>
<td>Nakhichevan AR</td>
<td>215</td>
<td>1%</td>
<td>1-2%</td>
<td>0-4%</td>
<td>3/2009</td>
<td>18.2 (9.9-26.5)</td>
</tr>
<tr>
<td>Nagorny Karabakh</td>
<td>702</td>
<td>16%</td>
<td>0-32%</td>
<td>0-82</td>
<td>6/2008</td>
<td>-</td>
</tr>
<tr>
<td>Armenia</td>
<td>3449</td>
<td>31%</td>
<td>0-83%</td>
<td>0-90%</td>
<td>5-6/2008</td>
<td>12.0 (8.8-15.2)</td>
</tr>
<tr>
<td>Georgia Samtskhe Javakheti, Kvemo-Kartli, Kakheti)</td>
<td>1016</td>
<td>11%</td>
<td>0-31%</td>
<td>0-57%</td>
<td>11-12/2008</td>
<td>12.4 (8.9-16.9)</td>
</tr>
</tbody>
</table>
NSP survey in Trans Caucasus - apparent prevalence

0 %
> 0 - 20%
> 20 - 40 %
> 40 - 60 %
> 60 %
not sampled
NSP survey in Trans Caucasus - true prevalence
(Se. 80%, Sp. 100%)
NSP survey
follow-up investigations

<table>
<thead>
<tr>
<th></th>
<th>No. of sera</th>
<th>Mean NSP prevalence</th>
<th>Mean NSP prevalence Range on village level</th>
<th>Sampling date</th>
<th>Age of animals; mean (±1SD); in months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cattle</td>
<td>92 cattle</td>
<td>3%</td>
<td>0-14%</td>
<td>2/2009</td>
<td>9.8 (7.6-12.0)</td>
</tr>
<tr>
<td>sheep</td>
<td>44 sheep</td>
<td>9%</td>
<td>0-25%</td>
<td></td>
<td>8.1 (5.9-10.3)</td>
</tr>
<tr>
<td>Armenia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cattle</td>
<td>200 cattle</td>
<td>11%</td>
<td>0-24%</td>
<td>2/2009</td>
<td>22.8 (4.5-41.1)</td>
</tr>
<tr>
<td>sheep</td>
<td>200 sheep</td>
<td>20%</td>
<td>0-36%</td>
<td></td>
<td>22.7 (3.7-41.7)</td>
</tr>
</tbody>
</table>
Explanations for introduction

- introduction of FMDV or NSP positive animals from outside
- contacts during seasonal grazing
- unnoticed or unreported FMD
- wild and grazing animals crossing borders
- incorrect age data
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- introduction of FMDV or NSP positive animals from outside
- contacts during seasonal grazing
- unnoticed or unreported FMD
- wild and grazing animals crossing borders
- incorrect age data
Animal/meat prices in the region ($/kg) - live animals in districts -

<table>
<thead>
<tr>
<th>Country</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Pigs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>3.7</td>
<td>3.7-4</td>
<td>-</td>
</tr>
<tr>
<td>Iran</td>
<td>2.3-3.3</td>
<td>3.2-4.2</td>
<td>-</td>
</tr>
<tr>
<td>Georgia</td>
<td>1.5-2</td>
<td>3-3.7</td>
<td>3</td>
</tr>
<tr>
<td>Armenia</td>
<td>1.6-2.5</td>
<td>2.4-3.7</td>
<td>2.9-3.5</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>4-4.5</td>
<td>5.5-6.5</td>
<td>-</td>
</tr>
</tbody>
</table>
Explanations for introduction contacts during seasonal grazing

role of sheep in introduction & spread?

sheep/cattle ratio:
no association with NSP prev. (p>0.05)

<table>
<thead>
<tr>
<th>Seasonal pasture</th>
<th>% of sample pop. migrating</th>
<th>NSP prev. of cattle migrating</th>
<th>NSP prev. of cattle not migrat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan</td>
<td>10.7</td>
<td>29.4</td>
<td>22.5</td>
</tr>
<tr>
<td>Armenia</td>
<td>38.3</td>
<td>38.5</td>
<td>25.9</td>
</tr>
</tbody>
</table>

p<0.05
NSP antibody results across borders (true prevalence)
Regional NSP situation (true prev.)

- Turkey: 25% (0-78%); 12/14
- Georgia: 0% (0-59%); 11/23, 13% (0-59%); 2/3, 39% (0-96%); 24/26, 0% (0-5%); 0/3
- Armenia: 39% (9-100%); 9/9, 66% (9-100%); 9/9, 46% (0-100%); 17/20, 26% (0-66%); 6/8, 1% (0-5%); 18/30
- Iran: 51% (0-96%); 6/7, 5% (4-9%); 3/3

Legend:
- Red: province mean
- Blue: range on village level
- Black: no.s of pos./total villages
NSP results provided by FGI-ARRIAH

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>NSP-ELISA results no. pos./ no. samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Northern Caucasus</td>
<td>2/ 1892</td>
</tr>
<tr>
<td></td>
<td>Krasnodarsky Krai</td>
<td></td>
</tr>
<tr>
<td></td>
<td>North Ossetia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Karachayev-Cherkessia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kabardino-Balkaria</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dagestan</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>North Ossetia</td>
<td>0/ 358</td>
</tr>
<tr>
<td></td>
<td>Abkhasia</td>
<td>0/ 182</td>
</tr>
</tbody>
</table>
Regional FMD events 2004 - 2009

- **FMD diagnosis**
- **NSP surveys (mean)**

- **buffer z.:** 10-58%
- **buffer z.:** 3-15%

- **2004**
  - Iran
  - Turkey
  - **Epidemics**: A Iran 05

- **2005**
  - N.Karabakh; O PanAsia II (ARRIAH)

- **2006**
  - Georgia; O serology, clinical signs

- **2007**
  - Arm/Azb 23-31%
  - Geo 11%

- **2008**
  - Nakh 1%

- **2009**
  - Arm/Azb: 3-11%
  - follow-up

- **A Iran 05**
- **O PanAsia II**
- **A Iran 05**
Project activities in past 2 yrs.

Workshops, meetings

- 3 National FMD Workshops; with participation from Iran and Turkey: Armenia (Nov.’07), Azerbaijan (Dec. 07) and Georgia (Feb. 08)
- 3 Annual project meetings (Tbilisi, Oct.‘07; Shiraz, Nov.’08, Rome, Apr.‘09)

Trainings

- Training in NSP serology (Armenia and Azerbaijan; Dec.’07, during the NSP survey)
- Training of one Azeri lab expert in NSP testing and lab procedures at the SAP Institute (Jan.’08)
- Computer/MS Excel training for (Azerbaijan)
Workplan until project end (June ’09)

- FMD spring vaccination
- regional simulation exercise (4-8. May’09)
- FMD awareness campaign (TV clips)
- project manual with diagnostic and field SOPs
- Regional database
Database for FMD vaccination, surveillance and risk

Armenia - Azerbaijan - Georgia - Iran - Iraq - Syria - Turkey

- storage, analysis and visualization of animal demographic data and FMD vaccination and surveillance data
- standardisation and improvement of national and regional surveillance and reporting
- first version ready in 6 weeks
Regional field simulation exercise

4-8th May in Georgia, Azerbaijan and Armenia

- allow staff from central and district level to practice their skills in FMD control
- test national contingency plans
- simulate a working environment that best represents real life conditions (i.e. time, pressure, resources).

Scope:
- A simulated outbreak of FMD in 1 village of each county
- Activation of local FMD control teams
  - vaccination
  - surveillance
  - outbreak investigations
  - diagnostic procedures
  - bio-security
Conclusions

- Buffer zone & and project activities have successfully contributed to preventing major epidemics in the Trans Caucasus

- Capacities of the countries has improved substantially
  - improvement of vaccination
  - labs - NSP serology
  - contingency plans - updated
  - epidemiology - reporting, risk assessments, data work, planning & conducting surveys

- In the Trans Caucasus, the NSP situation seems to reflect the FMD situation in Iran and Turkey; there are indications that the FMD situation has improved from 2008 on
Recommendations

Continue project activities in the Trans Caucasus

Main components of the next FMD project and to progress towards stage 3 of the Eurasia roadmap:

• **vaccination**
  - incl. identification and vaccination of risk populations, emergency vaccine bank

• **sero-surveillance**
  - background & risk populations

• **applied epidemiology**
  - quality reports/use of regional database
  - training
  - understanding of FMD risk, incl. economics

• **lab support**
  - SP testing
  - virus confirmation
  - proficiency tests

• **other measures**
  - Assist in developing and updating national FMD control plans
  - FMD awareness
Countries request support

(1) from EuFMD
- Continuation of the project & vaccine supply
- Increase of epidemiological and diagnostic support (epi training, diagnostic methods: virus confirmation and SP serology)
- Improve regional information sharing through the use of the regional database, lab networking, incl. Internet resources (Russian language)
- In addition to project meetings have annual meetings as part of the West Eurasia regional meeting, incl. Trans Caucasus countries, Turkey, Iran, Russia
- Georgia: include vaccination for animals grazing on summer pastures in the BZ (7 districts)
- Armenia: high risk areas in NW and NE Armenia (5 districts)

(2) from other international bodies
- Animal identification and registration